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(54) EYE-TRACKING WITH MEMS SCANNING  
AND REFLECTED LIGHT

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## ABSTRACT

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An eye-tracking system is provided. The system includes an at least partially transparent visible light waveguide having a visible light display region configured to emit visible light to impinge upon an eye of a user. A light source is configured to emit at least infrared (IR) light that travels along an IR light path to impinge on the eye. A microelectromechanical system (MEMS) scanning mirror positioned in the IR light path is configured to direct the IR light along the IR light path. A relay positioned in the IR light path downstream of the MEMS scanning mirror includes at least one mirror configured to reflect the IR light along the IR light path. At least one sensor is configured to receive the IR light after being reflected by the eye.

